

TORQUEMASTER

BRUSH SERVO MOTORS

2100 SERIES

Torque Systems specializes in the design of high performance brush servo motors that provide efficiency, flexibility of application, and a long and trouble-free service life. Our TORQUEMASTER® 2100 series is no exception, when integrated with high performance brush amplifiers, TORQUE-MASTER 2100 Series brush servo motors provide effective and highly efficient motion control solutions for a wide range of applications including factory automation, packaging, robotics, machine tools, medical instrumentation and more.

Performance Benefits:

- Delivers smooth and superior low speed performance, and maximum power ratings with low thermal resistance for high speed performance.
- Maximum torque in a smaller package
- Rugged industrial construction
- Continuous torque ratings up to 53 oz.-in with speeds up to 6500 RPM (*no load*)
- Peak torque ratings up to 300 oz.-in.
- High torque-to-inertia ratio delivers maximum torque per frame size
- Numerous custom options available



Design Features:

- Latest in high performance permanent magnet technology, and are available in eight standard windings as well as custom windings
- Motors can be customized to fit your exact application with tachometers, encoders, brakes and other options.
- Specialized machinery designs can install or retrofit servomotor with little or no restrictions
- Multiple configurations accommodate flexible design considerations
- Performance enhancement and feature convenience that allows Torque Systems motors to be incorporated into a broader range of applications

BRUSH SERVO MOTOR CHARACTERISTICS

SYMBOL			UNITS	2105	2110	2115	2120	2130
T _C	Cont. Torque	Oz-In		11	18	30	38	53
T _P	Peak Torque	Oz-In		50	100	150	200	300
T _F	Static Friction	Oz-In		3	3	3	3	3
F _I	Viscous Friction	Oz-In/KRPM		0.2	0.3	0.3	0.4	0.5
T _R	Cogging Torque	Oz-In		0.2	0.3	0.5	0.5	0.5
J _M	Inertia	Oz-In-sec ²		0.0018	0.0031	0.0044	0.0057	0.0083
R _{TH}	Thermal Res	Deg C/watt		6.9	6.2	5	4.5	3.8
T _{TH}	Thermal Time	Minute		10	10	15	15	20
t _m	Mech Time	Millisec		24.3	12.19	8.62	8.07	7.20
t _e	Elect Time	Millisec		1.6	1.9	2.1	2.1	2.2
F _C	Commutation	Watts x Oz In / Amps		488	722	1260	1548	2116
Wt	Weight	Lbs		1.9	2.9	3.1	3.3	4.3

Note: All values at 25°C Ambient.

WINDING

A	K _T	Torq. Sens.	Oz-In/Amp	2.27	3.8	6.12	7.74	11.2
	R _A	Arm. Resis.	Ohms	0.29	0.40	0.52	0.60	0.80
	K _V	Back E.M.F	Volts/KRPM	1.7	2.8	4.5	5.7	8.3
	F _C /K _T	P _b	Watts	215	190	206	200	189
B	K _T	Torq. Sens.	Oz-In/Amp	2.77	4.7	7.48	9.46	13.6
	R _A	Arm. Resis.	Ohms	0.44	0.61	0.77	0.89	1.18
	K _V	Back E.M.F	Volts/KRPM	2	3.5	5.5	7.0	10.1
	F _C /K _T	P _b	Watts	176	154	168	164	156
C	K _T	Torq. Sens.	Oz-In/Amp	3.53	5.9	9.52	12	17.3
	R _A	Arm. Resis.	Ohms	0.70	0.97	1.25	1.44	1.92
	K _V	Back E.M.F	Volts/KRPM	2.6	4.4	7.0	8.9	12.8
	F _C /K _T	P _b	Watts	138	122	132	129	122
D	K _T	Torq. Sens.	Oz-In/Amp	4.41	7.4	11.9	15	21.7
	R _A	Arm. Resis.	Ohms	1.13	1.52	1.96	2.25	3.01
	K _V	Back E.M.F	Volts/KRPM	3.3	5.5	8.8	11.1	16.0
	F _C /K _T	P _b	Watts	111	98	106	103	98
E	K _T	Torq. Sens.	Oz-In/Amp	5.54	9.3	15	19	27
	R _A	Arm. Resis.	Ohms	1.77	2.40	3.11	3.61	4.67
	K _V	Back E.M.F	Volts/KRPM	4.1	6.9	11.1	14.0	20.0
	F _C /K _T	P _b	Watts	88	78	84	81	78
F	K _T	Torq. Sens.	Oz-In/Amp	6.93	11.7	18.7	23.6	34
	R _A	Arm. Resis.	Ohms	2.78	3.80	4.84	5.57	7.40
	K _V	Back E.M.F	Volts/RPM	5.1	8.6	13.8	17.4	25.1
	F _C /K _T	P _b	Watts	70	62	67	66	62
G	K _T	Torq. Sens.	Oz-In/Amp	8.57	14.4	23	29	42
	R _A	Arm. Resis.	Ohms	4.31	5.76	7.32	8.41	11.29
	K _V	Back E.M.F	Volts/KRPM	6.3	10.6	17.0	21.4	31.0
	F _C /K _T	P _b	Watts	57	50	55	53	50
H	K _T	Torq. Sens.	Oz-In/Amp	10.71	18	29	36	52
	R _A	Arm. Resis.	Ohms	6.84	9.00	11.64	12.96	17.31
	K _V	Back E.M.F	Volts/KRPM	7.9	13.3	21.4	26.6	38.4
	F _C /K _T	P _b	Watts	46	40	43	43	41

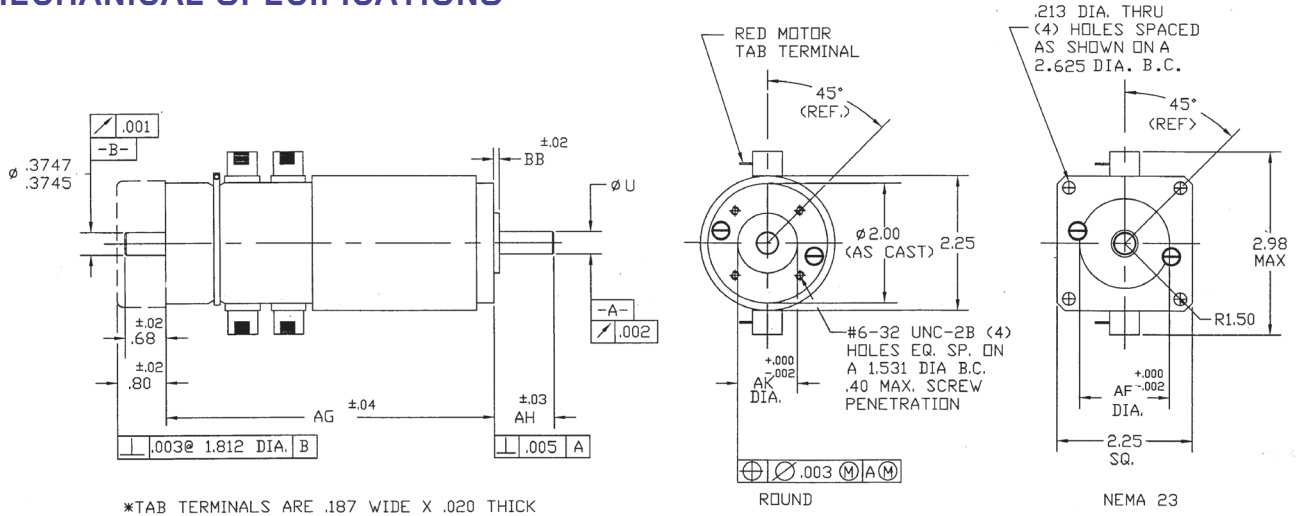
Note: Continuous torque specifications obtained with motor mounted to an 10" x 10" x 0.25" alum. plate at 25 °C ambient. Typical values are within ±10% of rating.

For custom designs please consult factory.

All specifications subject to change without notice.



MECHANICAL SPECIFICATIONS*



DIMENSION CHART*

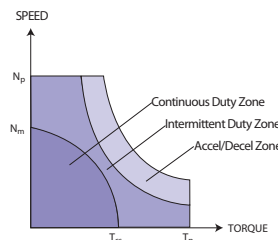
MOTOR	AG	AG	U DIA.		AH		AK	AF	BB	
	Motor Only Inches (Metric)	Motor Tach Inches (Metric)	STD	NEMA	STD	NEMA	STD	NEMA	STD	NEMA
2105	3.13 (79.5)	4.60 (116.8)	.3750/.3745	.2500/.2495	1.00	0.77	1.000	1.500	0.10	0.06
2110	3.63 (92.2)	5.10 (129.5)	.3750/.3745	.2500/.2495	1.00	0.77	1.000	1.500	0.10	0.06
2115	4.13 (104.9)	5.60 (142.2)	.3750/.3745	.2500/.2495	1.00	0.77	1.000	1.500	0.10	0.06
2120	4.63 (117.6)	6.10 (154.9)	.3750/.3745	.2500/.2495	1.00	0.77	1.000	1.500	0.10	0.06
2130	5.63 (143.0)	7.10 (180.3)	.3750/.3745	.2500/.2495	1.00	0.77	1.000	1.500	0.10	0.06

METRIC (mm): DIMENSIONS ALL FRAME SIZES

SHAFT: DIA	8j6	MOUNTING: PILOT	25.0
LENGTH	25.0	B.C.	38.89
		HOLE SIZE	M4

*All specifications are for reference only. Please consult the factory for certified dimension drawings. Standard Direction of Rotation: CCW rotation viewed from shaft end with red motor terminal positive with respect to black motor terminal.

TORQUE PERFORMANCE CURVES



NOTE: Continuous torque specifications obtained with motor mounted to an 10"x10"x.25" aluminum plate at 25 C° ambient. Typical values are within $\pm 10\%$ of rating.

STANDARD WINDING SPEED/TORQUE CURVE DATA FOR SIZING A SERVO MOTOR

- N_m = Maximum speed, continuous operation
- N_p = Peak speed, acceleration/deceleration and intermittent duty
- T_{cs} = Continuous stall torque
- T_p = Peak torque

All specifications subject to change without notice.

TORQUE PERFORMANCE CURVES

